

Appendix M

Population and Housing Projections for the US 281 North Area of Influence

US 281 North from Loop 1604 to Borgfeld Drive

Draft EIS

Population and Housing Projections for US 281 North Area of Influence

November 2010

SECTION 1: US 281 CORRIDOR AREA OF INFLUENCE (AOI)

Population Growth Assumptions and Methodology for the Draft Environmental Impact Statement (DEIS)

Population Assumptions

- Texas State Data Center (TSDC) prepares several population projection scenarios for Texas counties, based on different estimates of migration rates relative to observed population changes. For the 4 counties in the AOI Study Area (Bexar, Blanco, Comal, and Kendall), Texas State Data Center's Migration Scenarios generally show conservative long-term growth rates.
- SA Research Corporation (SAR) also uses ESRI Business Information Solutions (ESRI BIS) for demographics and short-term population projections. The ESRI BIS data estimate for the 4-County Region indicates population growth averaging 2.2% annually and projected 1.9% growth to 2035.
- However, the ESRI BIS and SA Research estimate show a 6.5% annual growth rate for the US 281 AOI from 2000-2009 and a projected 4.2% annual growth for 2010-2014.
- Although population growth drives housing and economic growth, it is the location of major employers, the housing market and the availability of developable vacant land that typically determines the geographic distribution of the population.
- Population projections such as those provided by the TSDC establish the range of population growth by counties based on natural increase and migration and establish the overall demand for housing.
- Within limits, single family housing distribution follows geographic trends established in the recent and more distant past.
- Population can be allocated geographically based on analysis of the housing market and land use patterns in small areas, such as the geographic sectors defined for this study.
- TSDC and ESRI Projection scenarios are used to establish a range of population growth, both numerically and in rate of growth.
- Using the land use-based files from County Appraisal Districts (CADs) and population projections, SAR prepared population projections according to the following generalized steps:
 1. Estimated the number of single family housing units by sector for 2000 and 2009 based on the 2000 Census, ESRI estimates and Appraisal District parcel files and SA Research single family surveys.
 2. Projected demand for single family housing units to 2035 based on overall population projections (short-term from ESRI, trends in single family absorption from surveys and a least-squares trend projection by SAR).

3. Estimated the capacity of single family housing units for each sector based on the current number of units, assumed density of future single family units, single family acres as a percent of developed land and vacant available land.
 4. Initial annual demand projections for single family units by sector did not consider the capacity of a sector to accommodate that demand.
 5. Next, projected demand to 2035 was compared to the capacity of the sector and “Excess Demand” numbers were calculated for those sectors.
 6. Total single family housing demand then became fixed at the capacity of the sector in the year that unadjusted single family demand exceeded capacity.
 7. Excess demand was then assumed to *shift* along the path of growth to the next sector with available capacity and thus began to build out more of those sectors than was occurring based on the growth trend of that sector.
 8. After these adjustments were made to the single family housing demand, the resulting numbers of single family units in each sector for 2020, 2030 and 2035 were applied to the population, housing and land use growth model developed by SAR.
 9. After the projected number of single family units was applied to a given year (say 2030) then other factors are used to account for the relationships between single family growth, total housing, number of households and population for each sector.
 10. The results are summarized by sector and totaled for the region through a series of links to the land use model.
- The US 281 Area of Influence (AOI) Region has an estimated 2009 population of 244,906 in 90,915 households. The Region includes a large portion of north Bexar County.

Human Demographics

- Summary table of race/ethnicity, age, income for 4 counties and Plan Area overall. Data for whole counties are included for base year 2009-2010 as estimated by ESRI BIS and SA Research Corporation.

	4-County Region	Bexar	Blanco	Comal	Kendall
Pop 4 Whole Counties	1804323	1645301	9504	115226	34292
Population Study Area	244906	197224	85	44631	2966
Hispanic Origin	45.2%	48.3%	20.6%	29.5%	0.2%
Black	4.7%	5.3%	0.8%	1.0%	0.4%
Age 18 +	74.4%	74.0%	77.7%	76.7%	75.8%
Age 65 +	45.2%	48.3%	20.6%	29.5%	0.2%
Pop/HH	2.69	2.68	2.52	2.67	2.73
Households	89914	77481	34	11172	1227
Mean HH Income	\$70,413	\$70,086	\$56,827	\$71,682	\$79,898
Per Capita Income	\$25,911	\$30,247	\$22,358	\$22,669	\$29,023

Housing Projections

- Least squares best fit projections applied to housing growth tend to increase housing production to a point of getting out of hand, e.g. annual housing production rate more the *doubles* for the Region toward the middle of the planning horizon.
- Geometric projection models yield much higher results while averages better represent the Region's capacity of construction and absorption.
- The Region has 110,942 total housing units as a percentage of 2009, including single family, apartments, manufactured homes and other housing types.
- Since 2000, the area has experienced an increase of 40,398 total housing units, 4,489 annually.

Historical Growth & Development

- Growth projections for the Region are based in part on population projections and part on historical housing absorption rates for selected growth sectors among the 13 Sectors created for small area analysis.

	2000	2009	2020	2030	2035	Growth	Growth
US 281 AOI Region Population	154922	244906	377718	522509	596227	6.5%	5.5%
Households	60293	90915	137551	189896	218131	5.6%	5.4%
Total Housing Units	70543	110942	158940	219387	252333	6.4%	4.9%
Single Family Housing Units	44715	74643	110112	152309	171596	7.4%	5.0%

Methodology

- Analyze trends in the housing market by small area shown as Sectors.
- Acquire and analyze demographic trends and characteristics for each County and each Sector.
- Prepare long-term housing projections by geographic sectors in the AOI Region.
- When allocating the initial housing growth projections to Sectors, when any sector begins to build out during the planning period, begin allocating the unmet growth (demand) to adjacent sectors that are within the path of growth.
- Sequence allocations of single family growth first to existing and planned subdivisions and scattered vacant lots; then to platted and lots known to be in the platting process; to future

lots designated within master planned subdivisions; and then to vacant land determined to be potential for single family development.

- Future growth over the next 25-26 years will be of similar character, magnitude and growth rate to that experienced in the area from 2000 to 2009.
- Considerations for location of *potential* single family residential on vacant land are as follow:
 - Character of surrounding land uses
 - Proximity to major street access
 - Proximity to schools and fire protection
 - Availability of community water service
 - Availability of community sewer collection (allow higher residential densities)
- Significant multi-family use is assumed to occur only within the growth sectors

SECTION 2: US 281 CORRIDOR AREA OF INFLUENCE (AOI)

Preliminary Land Use Projection Scenarios for Draft Environmental Impact Statement

Objective

- The objective of the Land Use Projection Scenarios is to provide land use and housing scenarios to determine the extent of traffic generation in the US 281 Corridor AOI.

Background Historical Growth & Development

- The US 281 Corridor AOI Region is characterized by Texas Hill Country geography, agricultural land, low density single family housing development in rural areas of the more urban counties as well as higher density single family and non-single family development in the Sectors.
- The Region added 29,928 single family housing units from 2000 to 2009, an average of 3,325 units and an increase of 7.4% annually.
- Growth projections for the Area are based in part on population projections and on historical housing absorption rates for each of 13 Sectors identified for small area analysis.
- Existing residential development in rural counties is typically ½ acre minimum lots with many homes on lots larger than 2 acres. The overall single family density within the regions is 1.36 units per acre. This is the net single family density representing single family housing units on land parcels that are designated as single family use by each County Appraisal District and does not include very large tracts of vacant land. We are usually more familiar with gross density of single family, which includes at least rights-of-way land in the calculation.

Land Use

- SA Research Corporation estimates that the AOI Region incorporates 324,185 acres of land (excluding the area of Camp Bullis) in the Counties of Blanco, Comal and Kendall with 99,099 acres in the study portion of Bexar County.
- Almost 38,000 acres are estimated to be public owned/preserved land and undevelopable due to floodplains and steep slopes.
- Rights-of-way (ROW) are considered to be developed land uses and are excluded from the County Appraisal Districts' available land, but are only estimates since they are not actually "parcels" in Appraisal District records. Additional ROW is also factored proportionately as other land is developed. Rights-of-way are estimated for each sector based on total developed land, and assumed factors range from 10% of total developed land in very rural areas, to 20% in urban areas.
- In 2009-10, approximately 55,004 acres in the Region were in single family use.
- Single family use is currently 17% of Total land and 51.6% of total developed land with estimated rights-of-way included.
- Based on projections of demand for single family housing and associated land uses, demand for land in the all Bexar County Sectors in the Study Region exceeds the capacity of each of those sectors for single family use by a total of 24,645 units.
- For this demand to be accommodated, allocations were made to adjacent sectors, which means that WCC, NWCC, ECC1, NCC1, NCC2, FNCC and ZEKC received the excess growth of 33,338 single family units while 8,359 single family units were allocated to areas outside the AOI.

Land Use Assumptions

- Single family housing development drives all other land uses.
- Future sewer service will be provided by SAWS in a defined area, primarily in Bexar County, as well as other areas within the Growth Sectors. In addition to a community water system, "urban" lot sizes (less than one acre), require community sewer for development.
- Future growth over the next 25-26 years will be similar in character, magnitude and growth rate to that experienced in the area from 2000 to 2009. This is a realistic scenario under current policies. However, policy changes in cities and their extraterritorial jurisdictions or even State-wide could affect the density and/or the pattern of development. This might also affect the geographic location of future growth.

- The key factor for residential development is the predominance of ½ to 1-acre lots due to requirements for individual septic systems. For the higher growth sectors in Bexar County, we use densities of 2.5 to 4.95 units per net acre for single family growth and 16.0 to 28.0 units per acre for non-single family. In rural sectors we use 1.0 to 1.35 units per acre for single family and 2.0 to 8.0 units per acre for non-single family, which includes manufactured homes, duplexes, etc.
- Floodplains, steep slopes and publicly preserved land that are not accounted for in County Appraisal District files are classified as Undevelopable for single family use in this analysis because it is not available for future development.
- Vacant platted and pending lots (Platted Vacant Acres) will be absorbed first in subdivisions and Sectors where they exist.
- Preference in allocation of single family growth will be shown for absorption in those Sectors that are considered to be in the path of growth and those Sectors that have experienced housing growth over the past 5-10 years.
- Master Planned Developments (MDPs) and other planned developments known at the time of this study will be preferred for development allocation as demand occurs within a Sector.
- Commercial uses are assigned to MDPs, known master plans or appropriate locations where single family growth occurs. Generally, locations in the path of growth and accessible to major roads, highways and thoroughfares are preferred for allocation.
- Although the absorption rate for 2000-2009 averaged 4,489 total housing units and 3,325 single family units annually, future absorption is projected to average 5,438 total units and 3,729 single family units annually for the next 26 years.
- Considerations for potential single family residential land use are as follow:
 - Character of surrounding land uses
 - Proximity to major road and street access
 - Proximity to schools and fire protection
- Non-Single Family (including apartments, duplexes, 4-plexes, manufactured/mobile homes) units and acres are present in some of the Growth Sectors based on available data from County Appraisal Districts. Multi-family uses are included in non-single family units and acres. For 2009 the acres are from appraisal district files and the number of units is a result of Total Housing Units less Single Family housing units. Densities are calculated from these estimates.

SECTION 3: DESCRIPTION OF FIELDS FOR POPULATION, HOUSING AND LAND USE

The following is a key to the data labels and column headings in the attached data spreadsheets.

County	One	of four counties within the US 281 Corridor AOI Region
Sector	Geographic	Sector polygons defined by SA Research Corporation
	for	growth Analysis and projection scenarios.
Tot Pop	Total	population within each sector, county and/or the Region
Grp Qtrs		Group Quarters Population (from the 2000 Census) taken as a given. No growth assumption was made for this variable.
HH Pop	Population	in Households (HH) is net population excluding Grp Qtrs from Tot Pop and for future growth is calculated by
	multiply	ing the number of HH by Pop/HH.
Pop/HH		Average HH size is HH Pop divided by the number of HH
Tot HHs		Total number of Households (occupied housing units) is the Total HUs multiplied by the Occ
Occ Rate		Percent of Tot HUs that are occupied in a sector – the number of HH by Tot HUs which is calculated for 2009 and held constant for 2009 and held constant for most Sectors.
Tot HUs	Non-NSFU housing)	Total number of Housing Units including single family (SFU) and (apartments, manufactured homes, and other types of within the sector
SFU (CAD)		Single Family Housing Units include both detached & attached units. (2009 include counts of the number of records classified as State Code “A” from County Appraisal District records (as available)
Pct SFU	Sector.	Percent Single Family Housing Units to Total Housing Units in a This is generally held constant throughout the planning period
SF Ac	from District	Acres of land in Single Family use (2009 include the sum of acres records classified as State Code “A” from County Appraisal records)
Dens SFU/Ac		Housing Density. The number of single family housing units (SFU) divided by the number of single family acres within a sector

Non-SFU Including homes	Total number of Housing Units that are not single family (SFU), apartments, duplexes, tri- and quad-plexes, manufactured homes and other types of housing within the sector.
Non-SF Ac County	Acres of residential land NOT in Single Family use (2009 includes the sum of acres from records classified as State Code “B” from Appraisal District records)
Dens Non-SF/Ac (Non-SFU)	Housing Density. The number of NON-single family housing units divided by the number of single family acres within a sector
Comm Ac from District center	Commercial acres within a sector (2009 includes the sum of acres records classified as State Code “F” from County Appraisal District records and includes uses such as retail and other shopping uses, office, wholesale, industrial and other commercial uses.
Comm Ac/100 SFU num	Total Comm Acres within a sector divided by SFU/100 (The number of Commercial acres for every 100 single family housing units)
Exempt Ac such and includes from	Exempt (Ex) includes primarily ABSOLUTE exempt properties as public owned, non-profit organization, schools, religious charitable organizations, railroad property and others. (2009 the sum of acres from records classified as State Code “E” County Appraisal District records)
Ex Ac/100 SFU num	Total Exempt Acres within a sector divided by SFU/100 (The number of Exempt acres for every 100 single family housing units)
Oth Ac Other unknown and	Acres include land in use by utilities, unclassified and classification. (2009 includes State Codes “J” “M” “Z” unknown uses per County Appraisal District records)
Oth Ac/100 SFU	Total of Other Acres within a sector divided by SFU/100 (The number of “Other” acres for every 100 single family housing units)
Tot Dev (CAD) Ac w/oROW	Total Developed Acres is the Sum of SF, Non-SF, Comm, Ex and Oth land uses. These are “net” acres, exclusive of rights-of-way (ROW).
ROW & Other Undevel	Rights-of-Way include streets, railroad, drainage, utility rights-of-way and other R.O.W. that are not easements on property owned by others.
ROW Factor County	Right-of-Way factor is an explicit assumption of the share of total development that represents rights-of-way. This is necessary because Appraisal District files represent delineated and recorded parcels

20%	or tracts of land. This is assumed to be 10% in rural sectors and up to in urban sectors.
Tot Dev (CAD) Ac w/ ROW	Total Developed Acres is the Sum of SF, Non-SF, Comm, Ex and Oth land uses. These are “net” acres PLUS rights-of-way (ROW).
Tot Dev Ac/100 SFU num	Total of Developed Acres within a sector divided by SFU/100 (The ber of Exempt acres for every 100 single family housing units)
Vac Plat Ac (CAD) from	Vacant platted acres includes vacant lots of all sizes and proposed Uses such as commercial . (2009 includes State Codes “C” and “O” County Appraisal Districts)
Vac Unplat Ac From	Vacant unplatted acres (2009 includes State Codes “D” and “E” County Appraisal Districts (as available)
Tot Vac Avail Ac represents	Total Vacant Available Acres = Vac Plat + Vac Unplat. This future developed land.
Est FEMA Floodplain was	Estimated (or calculated) acres of floodplains within a sector. (This estimated only for 2009)
Est Steep Slopes was	Estimated acres of slopes exceeding 15% within a sector. (This estimated only for 2009)
Public Lands – Undevel Ac subtracting	Estimated Undevelopable Acres. This was estimated for 2009 by Tot Dev, Tot Vac Avail, FEMA Floodplain and Steep Slopes from the Calc GIS Tot Ac. In Sectors where there are major public owned lands, these are accounted for.
Tot Land Ac Avail+R.O.W.	Total Land Area calculated as check total (Tot Dev Ac+Tot Vac & Oth Undev Ac)
Calc GIS Total Land Area (Ac)	Total land area of sector polygon (acres) as calculated by ArcGIS software.
Percent SF Developed developed	Percent of Land Developed is simply calculated from the and vacant land. (Tot Dev/(Tot Dev+Tot Vac Avail))
Tot Ac Abs X-Y by	Total Acres Absorbed from year X to year Y (e.g. 2009-2020) subtracting Tot Dev Ac w/ROW in 2009 from Tot Dev Ac w/ROW in 2020 and each decade.
Pct of <u>Tot</u> GIS Land Devel in 2009	This is Total Developed Land w/ROW divided by Calc GIS Total Land Area (Ac)

Pct of <u>Developable</u> Land Developed in 2009	This is Total Developed Land w/ROW divided by (Calc GIS Total Land <u>less</u> Public Lands-Undevl Ac)
SFU Add Cap at 09 Dens of	Estimated capacity for additional single family housing units in each sector if it becomes developed at the average current density that sector
Pct of Devel SF Ac That are SF	The percentage of developed “SF Ac” to “Tot Dev Ac w/ROW” used in projection of the sector’s capacity for SF development.
Assume Dens for New SF high	Assumed <i>net</i> Density SFU/Ac for future single family residential development of each sector. (ranges from .05 in rural areas to as as 5.0 SFU/Ac). Net density is the number of SF lots to the number of acres in SF lots.
SF Add Cap at Assumed Densities	The additional SFU capacity for growth if available vacant land were to be developed at the assumed optimum density of each sector
Tot SF Cap at Assumed Densities	The Total SFU capacity <i>including</i> growth if available vacant land were to be developed at the assumed optimum density of each sector
Assume Dens for new Non-SF high units	Assumed <i>net</i> Density Non-SF for future Non-SF residential development of each sector. (ranges from .01 in rural areas to as as 28.0 Non-SFU/Ac). Net density is the number of Non-SF to the number of acres in Non-SF parcels.
Factor for New Coml Ac	Assumed absorption in acres per 100 single family units (SFU) added for future commercial development in each sector.
Factor for New Exempt Ac	Assumed absorption in acres per 100 single family units (SFU) added for future Exempt property in each sector.
Factor for New Other Ac	Assumed absorption in acres per 100 single family units (SFU) added for future Other uses of property in each sector.

Initial Ac Abs in Excess of Avail Land = Initial Acres Absorbed in Excess of Vacant Available Land. As development occurs and allocation of SFUs are made to sectors, some sectors begin to reach Buildout by using all available vacant land. In order to accommodate the allocated growth (land absorption) we first attempted to adjust the amount of Comm, Ex and/or Oth Ac. Where that was not possible, we reduced the number of SFDU.

The demand pattern from 2010 to 2020 follows the 2000-2009 geographic trend direction. As sectors become built out, other adjacent sectors begin to experience increased demand/absorption.

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